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PSYCHOLOGY OF LANGUAGE.

Völkerpsychologie. By W. Wundt. Erster Band. Die Sprache. 2 Parts. Pp. xv+627 and x+644. (Leipzig: Engelmann, 1900.) Prices 14s. net and 15s. net.

PROF. WUNDT'S two bulky volumes form the first part of a long-expected treatise on race-psychology. The distinguished author has not the gift of concise utterance, and one almost shudders to think of the thousands of pages to which the work promises to extend by the time the second and third parts, dealing with myth and custom, have been completed. It is, perhaps, unfortunate that Prof. Wundt should have determined to treat his two remaining topics in the order just indicated; if there is anything at all in the results and methods of modern anthropology, it is from customs of the most practical kind, in fact from magic, that mythology on the whole derives its existence; hence one would think that custom rather than myth is entitled to the central position in a systematic "*Völkerpsychologie*." Can it be that Prof. Wundt's arrangement of his material has been unconsciously influenced by the now obsolete or obsolescent view of mythology as a "disease of language"? In any case, the intimate connection of the myths of one age with the magic of its predecessors seems to diminish the value of the author's psychological scheme by which custom is made to correspond to the volitional, myth to the emotional, aspect of racial life (vol. i. p. 27).

No one but a specialist in comparative philology is really competent to deal minutely with Prof. Wundt's elaborate investigations into the psychology of language. In the present notice, it is impossible to do more than supply a very brief summary of the topics treated of, and a briefer indication of a few of the author's leading results. He begins with a detailed and careful description of the general characteristics of emotion and its expression, which leads up to a study of the simplest and crudest form of language, the expression of emotion by a code of gestures. The account of gesture-language, which is based upon the artificial systems of signs in use among the dumb, as well as of the wide-spread gesture-language of the North-American Indians and of the Neapolitan populace, is full and interesting, especially in dealing with the question of the existence of grammatical form in gesture-speech. That gesture-language is not formless, as is often asserted, is well shown by reference to the fixed order in which the gesticulator expresses the constituent parts of a proposition. Prof. Wundt, by the way, appears not to be acquainted with the singularly full and excellent study of the gesture-language of Australian tribes contained in Mr. W. E. Roth's "*Aborigines of North-West-Central Queensland*." Proceeding in his third chapter to deal with articulate sounds, the author has much that is useful, if little that is new, to say about the differences between the song of birds and the song of men, and between the song and the speech of men. Incidentally he derives human song from vocal accompaniments of the rhythmical movements of work, and therefore regards its connection with religious cultus as

secondary (i., p. 265). It might, perhaps, be objected that the beginnings of both rhythmical movement and its vocal accompaniments are to be found in the corroborees of the Australians, among whom systematic work hardly exists, and that here, at all events, the rhythmical movements appear to arise directly out of the magical representations of incipient cultus. Prof. Wundt is on surer ground when he goes on to deal with the origin of onomatopœia. It is impossible to resist the arguments by which he shows that direct and intentional imitation of natural sounds can have little to do with the origin of names, and that the real process is one of impulsive and unintentional imitation by the organs of articulation of striking forms of physical movement.

The fourth chapter deals with the psychological causes of sound-change. Prof. Wundt finds the principal source of regular and continuous changes affecting whole classes of sounds, apart from such incidental influences as those of climate or racial mixture, in the growing tendency of civilised men to speed of thought and utterance. To this psychical source he traces those changes in articulation which have often been ascribed to the imaginary desire for ease of utterance; a desire which, in the first place, is never consciously operative, and, in the second, could not exist unless advance in culture brought with it tendencies which make an originally easy articulation increasingly difficult. Such tendencies we have in the increasing speed of civilised speech, with its effects upon pitch and accent. Prof. Wundt uses his theory chiefly to explain the familiar changes formulated in "Grimm's law." On the value of the explanation no doubt the philologists will claim to be heard, but it has at any rate the merit of assigning a psychological *causa vera* for facts which have often been either left entirely unaccounted for or put down to a purely imaginary "desire for ease." In the case of the sound-changes produced by assimilation, a second psychological principle is invoked, viz. the tendency of thought to outrun speech. The assimilation takes place because the second sound is already "in consciousness" before the first has been duly articulated. The same principle in combination with the laws of association is in the succeeding chapter employed to explain the various forms of paralalia. Curiously enough, the author does not treat of the important vowel-changes which occur in the life of a language, such as those by which diphthongs have been substituted in modern spoken English for so many of the original vowels. In the chapter on word-formation the sections dealing directly with the nominal subject are rather of grammatical and philological than of strictly psychological interest. The earlier parts of the chapter, on the other hand, which treats of the cerebral speech-centres, the phenomena of aphasia and the perception of short words, are of great psychological interest, but so loosely connected with the ostensible subject of the chapter that they would be more in place in a separate work on experimental and physiological psychology.

Prof. Wundt's second volume is at once far the more important half of his book and the more difficult to describe with justice in a brief notice. He has set himself the gigantic task of digesting the facts contained in such works as F. Müller's monumental "*Grundriss der Sprachwissenschaft*" into a systematic form, and eliciting

from them a psychological theory of the successive evolution of grammatical form and syntactical construction. This task is performed in the two chapters which deal with "word-forms" and "sentence-construction." These are followed by a chapter on the psychical causes of change of signification, and the whole work concludes with a final chapter devoted to a brief *résumé* and criticism of the various theories of the "origin of language." It is significant of the influence exerted upon modern psychological thought by the concept of evolution that this last chapter is by far the shortest in the book and that its result is in the main the purely negative one that speech, like the other human faculties, has no definite beginning or origin, but is connected by a continuous development with a pre-articulate and pre-human past, while the earliest stages of language known to us themselves presuppose a long development within human speech itself. Of the elaborate investigations which fill Prof. Wundt's chapters vi.-viii. it is impossible, for reasons of space, to say much except that they are of the highest psychological interest and importance. Specially important are the distinction between a preeminently nominal and objective type of language, like those, e.g., of the American or of the Ural-Altaic family, and a preeminently verbal and subjective type, like that to which we are accustomed in the familiar Indo-Germanic group, and the very similar distinction, in the realm of syntax, between the attributive and predicative types of proposition as corresponding to the "nominal" or objective and the "verbal" type of thought respectively. These and similar differences, obviously pointing to marked divergence of psychological endowment, are minutely and learnedly discussed by Prof. Wundt in a way which only makes one regret that his weakness for diffuse expression makes it so difficult to get a clear and systematic grasp of his argument as a whole.

A. E. T.

ELECTRICAL ENGINEERING TESTING.

Electrical Engineering Testing. By G. D. Aspinall Parr. Pp. viii+474; 218 diagrams, 31 tables. (London: Chapman and Hall, Ltd., 1902.) Price 9s. net.

DURING the last few years the rapidly spreading use of electrical methods of dealing with engineering problems has been naturally accompanied by the publication of a great mass of isolated work on the testing of electrical materials and machinery. Successful design requires not merely a knowledge of principles, but an intimate acquaintance with the properties of materials to be used; that these may be used economically and without needlessly high "factors of safety." And an electrical engineer is required to understand how to test for magnetic and electrical excellence the material he may have to use, as well as how to test his machinery for efficiency and staying power and his instruments for accuracy. It is probable that electrical engineering testing presents not only a possibility of, but a necessity for, greater refinement of measurement than occurs in other branches of engineering testing; the success of much of our electrical machinery and apparatus being more immediately dependent on exact design.

When a subject is developing so rapidly as that which Mr. Parr has chosen, it is not easy to maintain an exact knowledge even of what should be regarded as the simpler matters, and it is still less easy to keep this knowledge in due proportion. For that which was but lately abstruse or useless may rapidly become clear and even elementary information.

The volume before us will prove useful to many, containing, as it does, much information relating to electrical testing which, in spite of a rather unsatisfactory arrangement, is in a fairly accessible form. Its main portion consists of accounts of about 130 different tests, each arranged as follows:—A descriptive introduction; a list of apparatus wanted; what observations to take and how to take them; and concluding with "inferences" to be drawn from the results of the test. The book is styled "a practical work," meaning, we presume, not so much a text-book in which difficulties are explained as a hand-book containing useful information about tests. It is primarily written for students, and we do not doubt it will prove very useful alike to student and demonstrator.

The "descriptive introductions" are probably as satisfactory as the nature of the book will allow. The list of apparatus, while usually complete, will strike the reader as relating in particular to the apparatus of Mr. Parr's laboratory in the Yorkshire College. The next section of each test on taking and tabulating observations is very well given. It will save the student much thought and keep him from much bungling, and will raise the quality of his work—all but the first no doubt desirable when the course must be hurried over. The "inferences" are added at the end "to make the experimenter think and reason for himself." If the test had not been so well arranged for him beforehand, or the instructions so fully given, perhaps he would have had to think for himself before the test could have been carried out. This is a matter of opinion; but we think that the book will prove more useful in evening classes than with day students.

An appendix gives in a few pages the derivation of some formulæ employed, and the book concludes with some 100 interesting pages descriptive of apparatus used. The author shows much of his own apparatus and methods, which are interesting even when they do not strike one as the best.

The book is nicely printed, but bears signs of haste in preparation. Thus most readers, when they have grasped the peculiar use of the word "inference," will be surprised, if not amused, at the following: "Inference: Does the accuracy of the above test depend upon anything in particular?" p. 17; and on p. 22, under a similar heading, "Can anything in particular be deduced from the above results?" The author spells converter with an *o* in the final syllable, and writes anti-inductive where non-inductive is meant; and slips such as series for serious, p. 154, sale for scale, p. 378, Jolly for July, p. 390, &c., which are not infrequent, should have disappeared in the proof.

The figures are on the whole good, and the tables at the end welcome.

The author's style is often by no means lucid, and even when the meaning is clear it does not make agreeable